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An Annotated Bibliography of the Bristly Cutworm

Lacinipolia renigera (Stephens)

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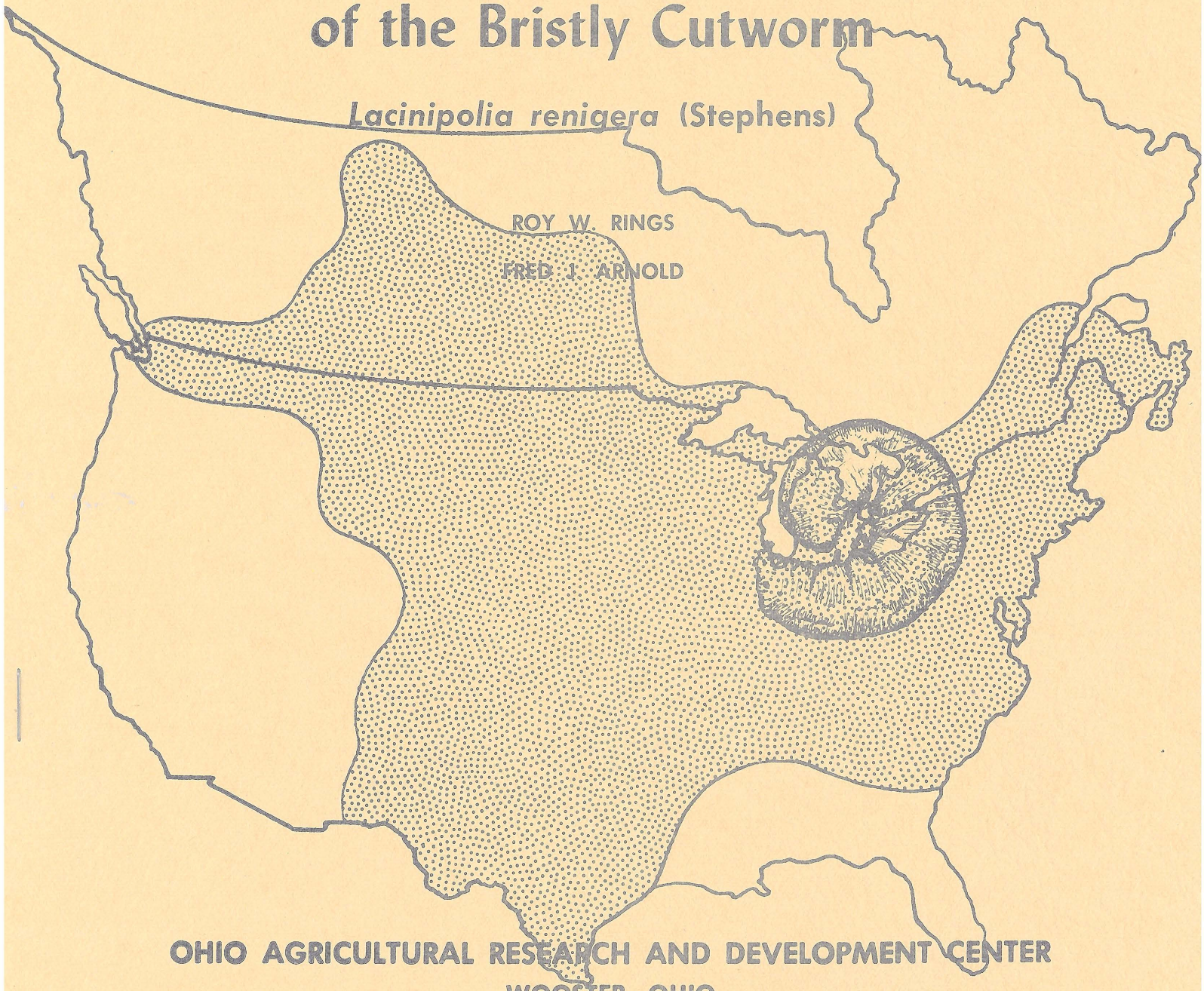

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
WOOSTER, OHIO

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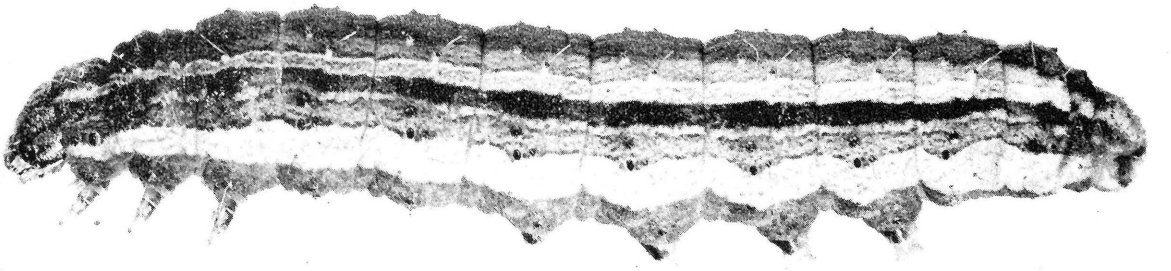
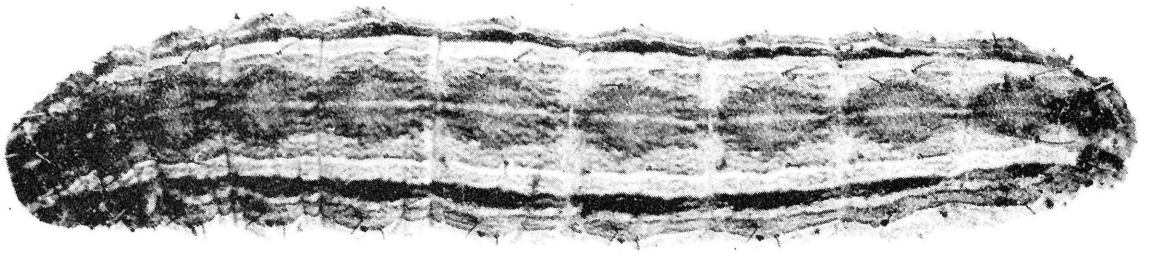


Lateral view of bristly cutworm.



Dorsal view of bristly cutworm.

AN ANNOTATED BIBLIOGRAPHY OF THE BRISTLY CUTWORM, *Lacinipolia renigera* (Stephens)

Roy W. Rings[1] and Fred J. Arnold[2]

INTRODUCTION

The purpose of this circular is to consolidate the abstracted literature on the bristly cutworm, *Lacinipolia renigera* (Stephens). This species occurs throughout the United States east of the Mississippi River, and its western range includes Colorado, Kansas, Louisiana, Nebraska, New Mexico, North Dakota, and Texas. It also occurs in Canada and Europe.

This species was originally described by James Stephens in 1829 in Illustrations of British Entomology, Haustellate, as *Celaena herbimacula*. This small moth is easily recognized by the presence of a pale-greenish spot at the base of the forewing and another pale-greenish spot near the hind angle of the wing. Specimens of *Lacinipolia renigera infecta* (Walker) (=*L. renigera*) lack the white in the reniform and are strikingly different in appearance (at first glance they may be taken for another species). The type specimens of *herbimacula* and *infecta* are both in the British Museum. Other synonyms of *L. renigera* are *Mamestra renigera* (Stephens), *Celaena renigera* (Stephens), and *Hadena renigera* (Grote).

The bristly cutworm larva is a small, yellowish-gray species, marked by a broad, pale medial stripe with a broad, black submedial stripe. The common name refers to the stiff, coarse setae which protrudes from all parts of the body.

This cutworm has a wide range of host plants which include alfalfa, aster, apple, asparagus, cabbage, cantaloupe, chicory, clover, comfrey (*Symphytum*), corn, cottonwood, dandelion, grape, grasses, plantain, red clover, dock, tobacco, turnip, vegetables, and wild endive. Crumb (1929) found the bristly cutworm most abundant in old clover fields which have a cover of litter. The larvae also occur in smaller numbers in pastures and wasteland.

Knutson (1944) reported that this is one of the most abundant species, and the absence of reported damage can be accounted for only by its feeding to a large extent on non-economic plants, or upon hay, grasses, and similar crops which

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do not show damage readily. Heavy and widespread damage does, however, occur to corn occasionally, as reported in 1967 in the U.S.D.A. Cooperative Economic Insect Report.

The bibliographical information was obtained by a thorough search of the libraries at The Ohio State University and the Ohio Agricultural Research and Development Center for the years 1869 to 1973.

The literature search recovered some, but not all, checklists, faunal lists, or comprehensive publications and texts which cannot be abstracted for the recovery of a single species.

This publication is not intended to be a comprehensive bibliography for taxonomic purposes, but is believed to be complete as far as references in American abstracting journals are concerned.

The authors have established a profile on the bristly cutworm in cooperation with the Mechanized Information Center of The Ohio State University Libraries. This computerized system of retrieval will aid in keeping this bibliographical information current. Supplementary bibliographical data on the bristly cutworm will be summarized at yearly intervals and will be available on request from the Ohio Agricultural Research and Development Center.

The preparation of this bibliography is only a part of an extensive, multi-state, research program supported by grants from the Cooperative State Research Service and the federal Environmental Protection Agency. This is a regional research project entitled "Bionomics and Management of Soil Arthropod Pests." The comprehensive research is being conducted by scientists from the University of Missouri, Illinois Natural History Survey, Iowa State University, Michigan State University, University of Nebraska, New York State Agricultural Experiment Station, Ohio Agricultural Research and Development Center, Purdue University, and the University of Wisconsin.

Entries are listed alphabetically by author except in cases where a publication is anonymous or more likely to be identified with a governmental agency under which it was published. The abbreviations in the citations follow the American standard for periodical title abbreviations which was published in Biological Abstracts, 45(13):4347-4361. All references in this publication deal with the bristly cutworm; however, the scientific name used in a given article is also used in the annotation so there is no question as to the species being cited. The number in parentheses following the annotation represents the page number which includes information on the bristly cutworm if it is different from the citation page number.

Ball, E. D. 1921. Entomology. Insect outbreaks. Iowa Agr. Exp. Sta. Annu. Rep. 1921:40-43.
The clover leaf weevil and bristly cutworm together destroyed many acres of red clover in the southern and central parts of Iowa. (41)

Beutenmüller, W. 1901. Descriptive catalogue of the Noctuidae found within fifty miles of New York City. Amer. Mus. Natur. Hist. Bull. 14:229-312.
The larva and adult Mamestra renigera are described. (298)

Bowles, G. J. 1880. Canadian cutworms. Annu. Rep. Entomol. Soc. Ontario for 1879. 37-46.
The author gives descriptions of the larva and adult Celaena renigera. He reports on G. Norman's observations that this species is very common at St. Catherines, Ontario, and believes it has two or more generations each year. (44-45)

THE CANADIAN AGRICULTURAL INSECT PEST REVIEW

This publication aims to present, in manuscript form, a periodical statement on current insect pest conditions. It presents data governing the seasonal appearance, the effects of winter, degrees of parasitism, notes on distribution and abundance of insect pests. It has been published by the Canada Department of Agriculture, Research Branch-Scientific Information Section, Ottawa, Ontario, from 1923 to present. From 1923 to 1967 this publication was known as the Canadian Insect Pest Review.

1924. Can. Insect Pest Rev. 2
The bristly cutworm, Polia renigera, was collected in Mississippi in the spring. Larvae were passing rapidly into the pupal stage. (26-27)

1942. Can. Insect Pest Rev. 20.
Lacinipolia renigera was fairly common in flights at Chatham, Ontario. (229)

1950. Can. Insect Pest Rev. 28.
The bristly cutworm was injurious to tobacco foliage in many fields in Kent County, Ontario. (156)

1959. Can. Insect Pest Rev. 37.
Lacinipolia renigera moths were taken in light traps in the Chatham area, Ontario, Sept. 16 to Oct. 15, 1959. (237)

1960. Can. Insect Pest Rev. 38.
Lacinipolia renigera moths were taken in light traps in the Chatham area, Ontario. (170, 223-224)

1961. Can. Insect Pest Rev. 39.
Lacinipolia renigera moths were taken in light traps in the Chatham area, Ontario. (209-210)

Crosby, C. R. and M. D. Leonard. 1918. Manual of vegetable-garden insects. The Macmillan Co., New York. 391 pp.
The larva and adult bristly cutworm are described and its food plants and overwintering are discussed. (285-286)

Crumb, S. E. 1915. A key to the cutworms affecting tobacco. J. Econ. Entomol. 8:392-396.
Mamestra renigera is included in this key to cutworms. Figure 10 illustrates one of the conical, dorsal tubercles, the base of its coarse bristle and the isolated skin granules. (395-396)

Crumb, S. E. 1929. Tobacco cutworms. U. S. Dep. Agr. Tech. Bull. 88:1-180.
The author discusses the geographical distribution, food plants, food and larval habits, seasonal history, and describes the egg, larval instars and moth of the bristly cutworm, Polia renigera. Natural enemies reported were the parasites Amblyteles sp., Apanteles forbesi Vier., Berecyntus celaenae How., all Hymenoptera. The following dipterous parasite was reported: Chaetogaedia analis V. d. W. Crumb also observed a spider, Lycosa fatifera Hentz, feeding on a larva in the field. (123-128)

Crumb, S. E. 1932. The more important climbing cutworms. Bull. Brooklyn Entomol. Soc. 27(2):73-100.
The author reports food plants as apple, cottonwood, grape, and many species of herbaceous plants, and gives distribution in Canada and the United States. Also presented are larval keys and descriptions of Polia renigera Stephens. (93)

Crumb, S. E. 1956. The larvae of the Phalaenidae. U. S. Dep. Agr. Tech. Bull. 1135:1-356.
This report includes a complete description of the ultimate instar of Lacinipolia renigera (Steph.). The author reports two generations each year of this species, and states that it feeds on apple, cottonwood, grape, and many species of herbaceous plants. The geographical distribution is also discussed. (133-134)

Edwards, W. H. and S. L. Elliott. 1883. On the transformations of some species of Lepidoptera. Papilio 3:125-136.
The authors give a description of the ultimate instar of Mamestra renigera. It had two generations, appearing in April and August, and fed on chicory, Cichorium intybus L. (133)

Ferguson, D. C. 1954. The Lepidoptera of Nova Scotia. Proc. Nova Scotian Inst. Sci. 23. Pt. 3:161-375.
The author reported that Lacinipolia renigera (Stephens) occurs quite commonly everywhere in Nova Scotia. It was collected from July 4 to September 4 at both light and bait. (235)

Ficht, G. A. 1940. Notes on Indiana Noctuidae. Proc. Indiana Acad. Sci. 49:243-253.
The author reported Polia renigera (Stephens) as the most common cutworm in the genus in Indiana. He also gave localities in Indiana where specimens were captured and the dates of moth emergence. (246)

Forbes, S. A. 1890. Notes on cutworms. 16th Rep. State Entomol. Ill.:84-97.
Dates of collection of bristly cutworm moths indicated two generations in Illinois. (95-96)

Forbes, S. A. 1904. The more important insect injuries to Indian corn. Univ. Ill. Agr. Exp. Sta. Bull. 95:331-399.
A brief description and illustration, food plants, life history and distribution of the bristly cutworm are given. (365-66)

Forbes, W. T. M. 1923. Trap-lantern record at Ithaca, New York (Lepidoptera). Can. Entomol. 55(7):151-158.
Light trap records at Ithaca, New York in 1919 and 1922 indicated seasonal flights of Polia renigera were irregular from May to October. Presumably there is more than one generation but records do not prove it. (153)

French, G. H. 1878. Lepidoptera. 7th Rep. State Entomol. Ill.:135-268.
The larva and adult of the figure 8 minor moth, Mamestra renigera, are described. The habits of the larva are briefly discussed. (215-16)

Frost, S. W. 1955. Cutworms of Pennsylvania. Penn. Agr. Exp. Sta. Bull. 596:1-29.
The bristly cutworm feeds on the roots of clover, grasses and a few vegetable crops. (23) It is included in a key to cutworm species. (6)

Garman, H. 1895. Cutworms in Kentucky. Ky. Agr. Exp. Sta. Bull. 58:89-109.
A brief description of the larva and adult bristly cutworm is given. (100)

Gillette, C. P. 1891. Notes on habits and life histories of certain cutworms and cutworm moths. Iowa Agr. Exp. Sta. Bull. 12:538-544.
There are two generations of this abundant species (Mamestra renigera) in Iowa. Larvae have been taken from turnips, clover, and prickly comfrey. (543)

Gossard, H. A. 1917. Cutworms, their habits, characteristics and means of control. Ohio Agr. Exp. Sta. Mo. Bull. 2(3): 85-90.
"The bristly cutworm (Mamestra renigera) is a small, yellowish-gray species, marked by a broad black stripe on either side with a broad pale band down the back. There

are other finer longitudinal lines and the common name refers to the stiff, coarse hairs or bristles which protrude from all parts of the body." (87)

Grote, A. R. 1874. List of the Noctuidae of North America. Bull. Buffalo Soc. Nat. Sci. 2:1-54.
"Hadena renigera (Steph.), 2, p. 16 (Celaena); Cel. herbimacula Guen. Noct. 1, p. 223." (16)

Grote, A. R. 1874. On two species of Agrotis, allied to A. triangulum. Can. Entomol. 6:131-132.
"Mamestra renigera (Steph.). This species, referred in my "list" to Hadena (p. 16), belongs to Mamestra, and should be interpolated on page 13 l.c., between M. cinnabarina and M. laudabilis." (132)

Guenee, A. 1852. Species Général des Lepidoptéres. Noctuelites 1:223.
Celaena herbimacula (=Lacinipolia renigera) is described. (223)

Hawkins, J. H. 1930. Tarsal claws of noctuid larvae. Ann. Entomol. Soc. Amer. 23:393-396.
The claws of Polia renigera were measured and the ratios of the various parts of the claw are presented in a table. (396)

Holland, W. J. 1934. The moth book, a popular guide to a knowledge of the moths of North America. Doubleday, Doran and Co., Garden City, New York. 479 pp.
Mamestra renigera Stephens is shown in color in Plate 23, Fig. 35. Holland used the common name of the Kidney-spotted Mamestra and synonyms of the scientific name as herbimacula Guenée and infecta Walker. The geographical distribution is given as New England and Ontario to Colorado. It also occurs in Europe. (195)

Knutson, Herbert. 1944. Minnesota Phalaenidae (Noctuidae). The seasonal history and economic importance of the more common and destructive species. Univ. Minn. Agr. Exp. Sta. Tech. Bull. 165:1-128.
The author gives locality records for the occurrence of Lacinipolia renigera in Minnesota. The seasonal occurrence of the species, as determined by light trap collections, is given for the years 1926 to 1929 and 1938 to 1940. These studies indicate that this species normally has two generations each year in Minnesota and it overwinters as a partially grown larva. In spite of being one of the most abundant cutworm species, it has seldom been reported to be of economic importance. (39-42)

Marten, J. 1880. Noctuidae. (Owlet moths.) Ill. Dep. Agr. Trans. 18 Append.:128-140.
The larva of Mamestra renigera is described and the adult is illustrated. (137)

McDunnough, J. 1938. Check list of the Lepidoptera of Canada and the United States of America. Part 1. Macrolepidoptera. Mem. S. Calif. Acad. Sci. 1:1-275.
This check list represents an attempt to show phylogenetic relationships and gives each species a number. The phylogenetic relationships in the Noctuidae were based upon a study of the genitalia. Lacinipolia renigera (Steph.) was given the number 1738 and herbimacula (Gn.) and infecta (Wlk.) are given as synonyms. (70)

Muesbeck, C. F. W. 1920. A revision of the North American species of ichneumon-flies belonging to the genus Apanteles. Proc. U.S. Nat. Mus. 58(2349):483-576.
This article describes Apanteles forbesi Vireck as a hymenopterous parasite of Polia renigera Stephens. W. E. Pennington reared the parasite from a bristly cutworm at Hagerstown, Maryland. The species also attacks armyworm larvae, Polia stricta Walker and Feltia sp. (516)

Norman, G. 1875. Captures of Noctuidae at St. Catharines, Ont. Can. Entomol. 7:3-6.
"Celaena herbimacula - 23rd June to October; seemingly a succession of broods; very common at sugar, light and rest." (6)

Puttler, Benjamin and W. A. Dickerson. 1968. Some aspects of the biology of Apanteles forbesi, a parasite of Lacinipolia renigera. Ann. Entomol. Soc. Amer. 61(6):1545-1547.
A. forbesi, Viereck, a solitary endoparasite of some noctuid larvae, was the second most abundant parasite of the bristly cutworm in Missouri. The life cycle of the parasite is given. (1545)

Puttler, Benjamin and S. E. Thewke. 1970. Biology of Microplitis feltiae (Hymenoptera:Braconidae), a parasite of the black cutworm, Agrotis ipsilon. Ann. Entomol. Soc. Amer. 63(3):645-648.
M. feltiae, a solitary endoparasite of soil-inhabiting cutworms, was recorded for the first time from Lacinipolia renigera. (645)

Puttler, Benjamin and S. E. Thewke. 1971. Field and laboratory observations of Hexamermis arvalis (Nematoda:Mermithidae) a parasite of cutworms. Ann. Entomol. Soc. Amer. 64(5): 1102-1106.
In Missouri and adjacent states, the nematode H. arvalis was commonly found in clover and alfalfa fields parasitizing Lacinipolia renigera, Feltia subgothica, and Agrotis ipsilon. (1102)

Riley, C. V. 1867. A chapter on cutworms. Prairie Farmer 19:413-414.
Celaena herbimacula (Guenée) was a synonym of C. renigera. The larvae fed on cabbage and wild endive. (414)

Riley, C. V. 1869. Cutworms (Lepidoptera-Noctuidae). The natural history of twelve distinct species. 1st. Rep. Noxious, Beneficial and Other Insects Mo.:67-91.
Descriptions and figures of larva, pupa and adult bristly cutworm are given. Synonyms of Celaena renigera (Stephens) are (=C. herbimacula Guenée) (=L. renigera). Riley gives the common name of the larva as the small, white, bristly cutworm. (86)

Riley, C. V. 1881. General index and supplement to the nine reports on the insects of Missouri. Dep. Int., U. S. Entomol. Comm. Bull. 6:1-177.
"Celaena renigera Stephens (Rep. I, p. 86 Referred by Grote to Hadena. Specimens in the Fitch collection marked with names (evidently from Walker) infecta, egens, defectua, subcadens? and murcimaculata seem to be all synonyms and mere variations." (56)

Ripley, L. B. 1923. The external morphology and postembryology of noctuid larvae. Univ. Illinois, Entomol. Lab., Cont. No. 86, 3:246-345.
The author presents a graphic representation of the epicranial index of Polia renigera. (331) He also figures the postgenal region, the cephalic aspect of the first and last instar, (337), spinneret, labial pulpus and labium. (340)

Smith, J. B. 1891. Revision of the species of Mamestra. Proc. U. S. National Mus. 14:197-276.
Description and habitat of Mamestra renigera (Steph.) are given. (250-251)

Smith, J. B. 1893. Catalogue of the lepidopterous superfamily Noctuidae found in boreal America. U. S. Nat. Mus. Bull. 44:1-424.
This gives references to synonymy of the species from 1829 to 1883. (124-25)

Stanley, W. W. 1936. Studies on the ecology and control of cutworms in Tennessee. Tenn. Agr. Exp. Sta. Bull. 159: 1-16.
Polia renigera was one of the species used in studies on the effect of temperature on developmental rate. Experiments with poison baits and control of cutworms are also discussed.

Stephens, J. F. 1829. Illustrations of British Entomology. Haustellata 2:16.
The original description of Celaena herbimacula (=Lacinipolia renigera) is given. (16)

Tietz, H. M. 1951. The Lepidoptera of Pennsylvania. A manual. Penn. Agr. Exp. Sta. Man.:1-194.
The author lists geographical locations in Pennsylvania where Lacinipolia renigera was collected. He also gives references to the original descriptions of the moths. (59)

Tietz, H. M. 1972. An index to the described life histories, early stages, and hosts of the macrolepidoptera of the continental United States and Canada. A. C. Allyn, Sarasota, Fla. 1-2:1-1041.
This publication includes a list of periodicals, journals, bulletins, and memoirs which deal with lepidopterous life histories and host plants. It also contains a list of insect common names and another list of common names of plants upon which lepidopterous insects feed. The species names are listed alphabetically with synonyms, references dealing with life history, and food plants. (570)

Treat, A. E. and K. D. Roeder. 1959. A nervous element of unknown function in the tympanic organs of moths. J. Insect Physiol. 3:262-270.
A large, richly tracheolated Type II neurone occurs in the region known as the Bügel in the thoracic, tympanic organs of many noctuid moths. This cell is the source of continuous and spontaneous impulses in the tympanic nerve. Physiological evidence for the existence of the B cell has been obtained for Lacinipolia renigera (Steph.). (262)

Turner, W. B. 1918. Female lepidoptera at light traps. J. Agr. Res. 14:135-149.
The author reports the dates of collection of female moths in light traps at Hagerstown, Md., condition of ovaries, and the number and development of eggs deposited. The species collected included Polia renigera. (136-137)

UNITED STATES DEPARTMENT OF AGRICULTURE
COOPERATIVE ECONOMIC INSECT REPORT[1]

The Bureau of Entomology of the U. S. Department of Agriculture, in cooperation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges, and other entomological agencies, organized an Insect Pest Survey in 1921. This survey attempted to assemble and disseminate all data on the distribution, seasonal and regional fluctuation of insect abundance, weather data as related to insect outbreaks, phenological data, and other miscellaneous information. Each year an annual digest of the important facts gathered during the past season was published in the form of Insect Pest Summaries.

From 1921 to 1950, this publication was entitled "The Insect Pest Survey Bulletin." In 1951, the Bulletin was replaced by the "Cooperative Economic Insect Report," Vol. 1, No. 1, July 31, 1951. No explanation is given in this publication for the name change.

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[1]Issued by Plant Protection and Quarantine Programs, Animal and Plant Health Inspection Service, U. S. Department of Agriculture.

1955. Coop. Econ. Insect Report 5.
The bristly cutworm was prevalent in Delaware. (269, 319) L. renigera varied from 0 to 15 per 10 square feet in clover in Illinois. (352)

1956. Coop. Econ. Insect Report 6.
Populations of bristly cutworm were low in alfalfa and clover in Illinois. (688)

1958. Coop. Econ. Insect Report 8.
Lacinipolia renigera averaged 0-6 per square foot in clover and alfalfa in Illinois. (320)

1960. Coop. Econ. Insect Report 10.
Populations of cutworms in alfalfa and clover varied 0-8 per square foot; L. renigera predominated. (325)

1962. Coop. Econ. Insect Report 12.
Lacinipolia renigera ranged 0-3 per square foot in clover and alfalfa in Illinois. (454)

1963. Coop. Econ. Insect Report 13.
Bristly cutworms ranged 0-6 per square foot in clover and alfalfa in Illinois. (427, 455)

1964. Coop. Econ. Insect Report 14.
Adult populations of Lacinipolia renigera declining at Wooster, Ohio. Eggs laid Sept. 11 hatched Sept. 25. (1105)

1965. Coop. Econ. Insect Report 15.
Black light catches of L. renigera at Reynoldsburg, Ohio. (635, 672)

1967. Coop. Econ. Insect Report 17.
Bristly cutworms caused heavy and widespread damage on corn throughout Hidalgo and Starr counties, Texas. (404) Damage heavy and widespread on cantaloupe in Hidalgo and Starr counties, Texas. (411)

1968. Coop. Econ. Insect Report 18.
Lacinipolia renigera common in grass debris in red clover in Illinois. (330) Adults more numerous than in 1967 in New Jersey. (552) L. renigera was collected from alfalfa in Wisconsin. (580) Adults collected in light traps in Michigan. (609) High at all blacklight stations in Michigan. (734) Michigan light trap catches. (758)

1969. Coop. Econ. Insect Report 19.
Few bristly cutworms in alfalfa in Wisconsin. (308) Bristly cutworms averaged 5-7 per square foot in white clover in Benton Co., Missouri. (596)

1971. Coop. Econ. Insect Report 21.
The bristly cutworm caused serious damage on asparagus in Oceana Co., Michigan. (395)

Walkden, H. H. 1950. Cutworms, armyworms, and related species attacking cereal and forage crops in the central Great Plains. U. S. Dep. Agr. Circ. 849:1-52.
This article discusses the geographical distribution, economic status, food plants and larval habits, seasonal history, and life cycle of L. renigera. The bristly cutworm overwinters as a larva and has two generations a year throughout its known range. One of 16 field-collected larvae was parasitized by Berecyntus bakeri var. bakeri How. (26-27)

Walker, F. 1856. List of the specimens of lepidopterous insects in the collection of the British Museum. Part X:262. Celaena herbimacula (=L. renigera) is described (In Latin). (262)

Whelan, D. B. 1935. A key to the Nebraska cutworms and armyworms that attack corn. Nebraska Agr. Exp. Sta. Res. Bull. 81:1-27.
In addition to the key, a larval description, distribution, seasonal abundance, habits, and food plants of the bristly cutworm are given. (22)

Whitcomb, W. D. 1928. An experiment in trapping cutworms. J. Econ. Entomol. 21(4):592-598.
Three trapping experiments in which the traps were examined at 2 and 3-day intervals resulted in the collection of 7,703 cutworms. The majority of the cutworms were collected in a field 100 feet long and 36 feet wide in which the sod had been plowed under on August 4, 1926. On April 25, 1927, it was harrowed and 50 sods of chickweed were placed in five rows running lengthwise in the field. Polia renigera moths were reared from larvae collected in this manner.

INDEX

This index was prepared on a computer from keywords indicated on the index card file. Information may be retrieved by author's name (left-hand column) and date (right-hand column), by host plant, by geographical locality, and by subject, i.e., larval description, life history, outbreak, geographical distribution, etc. The Canadian Insect Pest Review is abbreviated as CIPR and Cooperative Economic Insect Report is abbreviated as CEIR.